The Full Stack
A Short Overview

The Joint Task Force on Networked Media TR-1001-1 "Full Stack"

What is it?

Each of the standards within the SMPTE ST 2110 / AMWA NMOS ecosystem was written with a lot of flexibility in mind – dozens of different use cases were considered, ranging from benchtop lash-ups to mega-facilities with full-time engineering staff who want to control every detail. The reality of most facilities is somewhere in between – an easy-to-modify system with a reasonable level of maintainability.

The term "full stack" derives from the idea of a "stack" of engineering functionality, where some items are prerequisites for others to be "built up" upon them.

The Joint Task Force on Networked Media (JT-NM) TR-1001-1 is an umbrella specification that defines:-

- A set of requirements on Media Nodes (things that make or consume ST 2110 signals)
- A set of Services those Media Nodes can expect to find in the environment

Why does it help?

TR-1001-1 focuses on a specific use case – "Engineered Facilities". These are facilities like production centers, OB trucks, etc. where the network and overall architecture of the system has been engineered for the purpose, and users wish to be able to add or remove devices with a reasonable workflow but without a burdensome engineering effort.

Where TR-1001-01 fits in the big picture

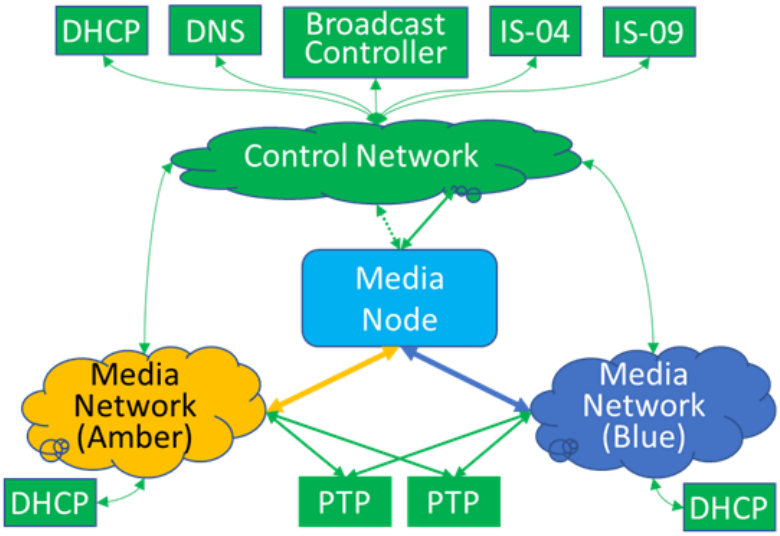
TR-1001-1 is a recommendation of the JT-NM – a cooperative effort amongst:-

- AMWA (Advanced Media Workflow Association)
- EBU (European Broadcasting Union)
- SMPTE (Society of Motion Picture and Television Engineers)
- VSF (Video Services Forum)

How does it work?

JT-NM TR-1001-1 defines an environment where AMWA NMOS IS-04 is used by the devices and the broadcast controller, in order to find each other, and then AMWA NMOS IS-05 is used to control connections between devices.

This allows the Broadcast Controller to integrate new devices from the NMOS registry and map them into routing systems; likewise it allows the devices to operate in systems without the Broadcast controller vendor needing to write a custom driver.
Everybody wins.



JT-NM TR-1001-1 specifies the method for devices to find the NMOS registry, using Unicast DNS Service Discovery (DNS-SD). Some early NMOS implementations used MDNS for this purpose, but this is simply not an appropriate technology for typical network environments – hence the industry's shift to DNS-SD for this important role.

DNS-SD is also used by devices to locate the "System Resource" defined in AMWA NMOS IS-09. This simple web service allows new devices to find out the PTP domain number and other important system-specific information.

At a more basic networking level, TR-1001-1 specifies that the environment will supply DHCP service to the devices. This simple service, well understood by IT professionals everywhere, provides network addresses, DNS server details, hostname, and other basic information that would otherwise need to be configured by hand.

A note on JT-NM TR-1001-01. This is written as a helpful public reference that can be used by integrators and end-users when specifying equipment requirements for use in professional media network applications. Instead of each end-user writing many pages of detailed requirements for their individual procurement processes, users can specify JT-NM TR-1001-1 as a requirement for all media nodes in their design process. This allows vendors to clearly understand the requirements and be able to recognise the common requirements across many customers.

JT-NM TR-1001-1 also serves as a guideline and source of requirements for the related "JT-NM Tested" program.